



*Eight countries, connected by one ecosystem,
working together to secure its future.*



Report of the
Technical Workshop
on Developing an Action Plan
on the Overexploitation of Marine Living Resources
30 -31 May, 2012 • Phuket, Thailand

Bay of Bengal Large Marine Ecosystem Project



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1. BACKGROUND

A Strategic Action Programme (SAP) that addresses and remediates the major transboundary environmental concerns and issues in the Bay of Bengal is one of the two major outputs of the BOBLME Project. The concerns and issues addressed in the SAP have been identified and prioritized in the BOBLME Transboundary Diagnostic Analysis (TDA) that included an extensive consultative process involving all of the BOBLME countries. The concerns were grouped under three themes –

- (i) Overexploitation of marine living resources,
- (ii) Degradation of critical habitats, and
- (iii) Pollution and water quality and 14 issues related to these themes identified.

On 15-17 February 2012, the BOBLME National Coordinators and SAP experts met in Phuket to draft a SAP framework that incorporated an outline of an action plan and also developed a work plan for SAP completion. The meeting also developed Ecological Quality Objectives (EcoQOs) for each theme to guide the formulation of the action plan through subsequent regional technical workshops and developed example objectives, targets, indicators, information needs and actions within the three priority themes.

A regional technical workshop was held in Phuket, Thailand, from 30 - 31 May 2012, to further develop the action plan for the theme "Overexploitation of marine living resources". Its objective was to derive objectives, targets, indicators (including information needs) and actions, to address the four issues under this theme:

1. Decline in overall availability of fish resources
2. Changes in species composition
3. High proportion of juvenile fish
4. Changes in biodiversity, including vulnerable and endangered species

Overexploitation of marine living resources has been recognized as a high priority concern in the BOBLME. Proximate causes that have resulted in overexploitation of the marine living environment have included:

- Excessive fishing effort and overcapacity
- Destructive fishing methods
- Unselective fishing practices and gear
- Illegal, unregulated and unreported (IUU) fishing, both national and international

These in turn are a result of:

- "Open access" regime;
- Government emphasis on increasing production;
- Inappropriate subsidies
- Increasing fishing effort, especially trawlers and purse seiners;
- High consumer demand for fish, including for seed and fish meal for aquaculture;
- Weak fisheries MCS and enforcement
- Strong incentives to encroach into areas with better returns.

In formulating objectives, targets, indicators (and information needs for these) and actions, these proximate and root causes were considered. Although the focus of this workshop was on Overexploitation (specifically of fisheries), participants were reminded of the need to capture the close inter-linkages between fisheries, habitats and pollution.

The outputs of this workshop will form the basis for national consultations, the results of which will be included in the National Action Programmes (NAPs), as well as in the SAP.

The workshop was facilitated by the BOBLME Project's Chief Technical Advisor (CTA), Dr. Rudolf Hermes.

The agenda for the meeting is given as Appendix I.

The list of participants is given as Appendix II.

2. INTRODUCTION TO THE STRATEGIC ACTION PROGRAMME AND TRANSBOUNDARY WATERS ASSESSMENT PROGRAMME

Following the opening of the workshop and welcome address by Dr Chris O'Brien (Regional Project Coordinator), Dr R. Hermes gave a presentation introducing the SAP, including its content, process and timetable for completion.

Dr Sherry Heileman, consultant and workshop resource person, gave a presentation on Indicators and the GEF Transboundary Waters Assessment Programme (TWAP). During the first phase of TWAP, an indicators based methodology was developed by an international group of experts for the assessment of LMEs. The BOBLME has decided to adapt this methodology, specifically the indicators, for inclusion in the SAP.

3. WORKING GROUP TASKS AND OUTPUTS

Dr Hermes gave a presentation providing guidance to participants on the tasks to be undertaken during the workshop. Two break-out groups were formed, with each consisting of a mix of experts from all the countries represented at the workshop.

On Day 1, the groups were assigned the task to develop objectives targets, indicators, and information needs for each of the four issues under this theme, using Part A of a template given to groups. Dr Hermes was assisted by two resource persons, Dr E. Vivekanandan and Dr S. Heileman. Each group gave a presentation on its respective outputs during plenary.

On Day 2, the two groups re-convened to identify actions needed to address each of the four issues, using Part B of the template. As in Day 1, the groups presented their respective outputs, and compared them with a view to consolidating the two sets of outputs from both days into a single table for each issue.

On the final day of the workshop, the plenary compared the results of the two working groups and suggested ways that they could be consolidated. The consolidated and completed templates for each issue are given in Appendix III.

A number of major points were also discussed by the Working Groups and suggestions made:

- Both short-term and long-term targets fulfilling the objectives should be adopted; for instance, targets on implementation for the year 2020, and results of the implementation for 2025. Alternatively, the target years may be modified as immediate, medium or long term after consultation with the countries in developing the NAPs.
- The countries in the region have already adopted MDGs and several other frameworks (e.g. CBD). The targets should align with the MDGs, CBD, etc. to fulfil compliance as well as make the targets more effective. It is also suggested to harmonize the indicator list with the MDG indicators and other international environmental conventions that have been adopted by each country.

- Immense local knowledge on fisheries exists in the countries. This should be captured and used for better management and sustainability of the resources, where appropriate.
- A compendium on the local knowledge on fisheries in each country will be useful for the entire region.
- Economic or market instruments (e.g. incentives, taxes) should also be considered and evaluated for use in fisheries management and regulation.
- Several alternative livelihood options (such as sustainable aquaculture) are available in each country. These options should be explored to reduce fishing pressure on resources.
- It is important that National Consultations include technical, socio-economic and governance experts.
- One of the root causes of overexploitation in the region is poverty of the coastal communities and inequitable access to and return from fisheries. This cause should be considered in the background in all the National Consultations.
- The list of actions for each issue is very long. Several of the actions are pertinent to multiple issues while others are more specific to a particular issue (focus should be on the latter for each issue). Prioritizing of actions will be done during NAP consultations.

4. CLOSING REMARKS

Dr Hermes thanked participants and emphasized the importance of their involvement in the national SAP/NAP consultations in their respective countries.

APPENDIX I AGENDA



Bay of Bengal Large Marine Ecosystem Project

BOBLME Project Regional Workshop to develop an action programme for SAP theme "Marine Living Resources"

30-31 May 2012

Phuket, Thailand

Day 1. Wednesday 30th May

1. 0900: Welcome and workshop purpose [Chris O'Brien - BOBLME RC]
2. 09:15: Introduction to the SAP – content, process and timetable for completion [Rudolf Hermes - BOBLME CTA]
3. 09:30: Indicators and TWAP [Sherry Heileman – TWAP]
4. 10: 00: Morning Tea/photo
5. 10:30: Setting objectives/targets/indicators/information needs based on TDA issues
Introduction and working group tasks [Derek Staples – consultant]
11:00: Working groups
12:30: Lunch
13:30: Working groups (continued)
15:30: Afternoon tea
16:00: Report back from working groups
16:45: Discussion and wrap up

Day 2. Thursday 31st May

6. Agreeing on actions for the SAP
0900: Introduction and working group tasks [Derek Staples]
09:30: Working groups
10:30: Morning tea
11:00 Working groups (continued)
12:00: Report back from working groups
12:30: Lunch
7. 13:30: Final document for the SAP - next steps

Closing

APPENDIX II LIST OF PARTICIPANTS



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APPENDIX III CONSOLIDATED LIST OF ACTIONS

THEME: Overexploitation of marine living resources	
EcoQO: Fisheries and other marine living resources are restored and managed sustainably	
ISSUE 1: Decline in overall availability of fisheries resources	
PART A	
Objective, target, indicators, information	
Objective <i>What are you trying to achieve to address this issue?</i>	Restore fisheries resources that have declined
Target <i>What is the target and by when?</i>	<ul style="list-style-type: none"> · Increase abundance and biomass of selected trans-boundary fish stocks by 5% by 2020; · Reduce fishing capacity; · Minimize IUU fishing in the region by 2020.
Indicator <i>What measure would you use to judge performance</i>	<ul style="list-style-type: none"> · Total annual catch and fishing effort; · Catch rate (CPUE); · Biomass; · Mean size of fish landed.
Information needs <i>What information is required to check the indicator against the target?</i>	<ul style="list-style-type: none"> · Fisheries Statistics (catch levels, effort data); · Length frequency data in landing areas for selected species; · Stock assessment of selected transboundary fish stocks at a regional level.
PART B	
Actions	
Institutional arrangements <i>What new institutional arrangements will be needed?</i>	<ul style="list-style-type: none"> · Arrangements for better co-operation in the management of fish stocks within the country (Fisheries Advisory body/ Management council); · Arrangements for better co-operation in the management of shared fish stocks between countries in BOBLME region (Regional Fisheries Management/ Advisory body);

	<ul style="list-style-type: none"> • Establishing National Technical Committees to address concerns on shared stock; • Bi/Multi-national agreement to strengthen arrangements to determine and implement management measures and to combat IUU at a regional level.
<p>Legal and policy reforms <i>What policy reforms will be needed in the future and what legal support is required?</i></p>	<ul style="list-style-type: none"> • Incorporate FAO's Code of Conduct for Responsible Fisheries (CCRF) including the ecosystem approach to fisheries (EAF) in national fisheries legislation; • Formulate legislation for licensing schemes; • Formulate/strengthen legislation to address IUU fishing (E.g. Port state measures); • Formulate National Plans of Actions–IUU and a Regional Plan of Action-IUU; • Allocate adequate funds for fisheries management; • Harmonize regulation or management measures such as Total Allowable Catch (TAC) for trans-boundary species within BOBLME; • Incorporate climate change in fisheries management plans; • Involve fishermen's organizations, research institutions in policy formulation process • Promote implementation of UN fish stock agreement and FAO CCRF; • Review and update fisheries law's , especially with regard to penalty clauses; • De-centralize fisheries management.
<p>Management measures</p>	
<p>- Current <i>What management actions are currently used?</i></p>	<ul style="list-style-type: none"> • Licensing of fishing vessels, traders, processing plants, etc; • MPAs and No-take zones Zoning; • Seasonal/area closures; • Co-management for few fisheries; • Gear regulation - Prohibition of destruction fishing practices and gears/mesh size regulations, etc. <p><i>(Remark: Many of the above management actions are not at desired level or are inadequately implemented)</i></p>
<p>- Future <i>What needs to be in place in the future?</i></p>	<ul style="list-style-type: none"> • Regulations to reduce destructive fishing gear/implement controls on gear restrictions; • Strengthen co-management; • Eco-labelling/Certification (eco-friendly fisheries); • Revised subsidies schemes/provide incentives to promote sustainability of fisheries;

	<ul style="list-style-type: none"> • More effective implementation of current fisheries management measures and frameworks, incl. CCRF; • Optimize fishing capacity to be commensurate with stock abundance, including regulation of new entries to the fishery and development and implementation of NPOA/RPOA for management of fishing capacity; • Implement TAC for selected stocks by 2020; • Rehabilitation of habitats (Covered under Degraded critical habitat theme) • Sea ranching of depleted fish species (example: Hilsa, Indian mackerel, swimming crab), where practical.
<p>Enforcement and compliance</p>	
<p>- Current <i>What arrangements are currently used to ensure compliance with rules and regulations?</i></p>	<ul style="list-style-type: none"> • Fisheries Ministries and other organizations (National and Regional Fisheries Management Organizations (RFMO) e.g. Indian Ocean Tuna Commission (IOTC); • Coast Guard and Navy; • Monitoring, control and Surveillance (MCS); • Vessel Monitoring Schemes (VMS).
<p>- Future <i>What extra enforcement and compliance arrangements will need to be introduced?</i></p>	<ul style="list-style-type: none"> • Establish Observer schemes; • Strengthen existing MCS systems and establish a network of MCS in BOBLME; • Establish and strengthen fisheries management bodies/units at national level to improve implementation of management measures; • Strengthen fishers' organizations to promote compliance; • Enhance the use of VMS.
<p>Awareness and communication <i>Who will be the main target(s) for improved communications and awareness building?</i></p>	<ul style="list-style-type: none"> • Policy makers and managers; • Fishermen, Fishermen Organizations/co-operatives; • Government authorities/Fisheries Departments; • NGOs; • Legal experts; • Local leaders/religious leaders; • Educational institutions and researchers; • Media personnel;

	<ul style="list-style-type: none"> • Private sector, including fish buyers, exporters, processors; • Consumers; • Meetings, newspapers, radio, social media, etc. <p><i>Some approaches to raising awareness - stakeholder meetings for the new management measures/ regulation/ effective management measures</i></p>
<p>Information strengthening <i>What actions are needed to strengthen information needed for the indicators?</i></p>	<ul style="list-style-type: none"> • Strengthen data collection system on fishing effort and fish landings, CPUE (including use of fishing log books); • Stock assessment of selected trans-boundary species; • Establish a regional database system/network; • Better information on impact of climate change and options on adaptation and mitigation.
<p>Human capacity development <i>What capacity building is required and who be the main target audience?</i></p>	<p>Capacity building in:</p> <ul style="list-style-type: none"> • Fisheries management (policy makers, fishery managers, fishers); • Handling and analysis of fisheries data incl. standardizing national and regional fishing effort (fisheries officers, researchers); • Stock enhancement (fisheries officers); • Responsible fishing (fishers); • Stock assessment (fisheries researchers, fisheries officers); • Climate change adaptation and mitigation.
<p>Responsible agency <i>Nominate what agency is responsible for monitoring and reporting on the issue? (NB: Data providers vs monitoring and reporting)</i></p>	<ul style="list-style-type: none"> • Departments/Ministry of Fisheries at national and sub-national level; • Local Councils/Bodies; • Research Institutions; • Fishermen's Organizations; • Private Companies; • Customs; • Specialized Commissions / committees for stock assessment; • Regional institutions (E.g. SEAFDEC, BOBP-IGO).
<p>Other</p>	

ISSUE 2: Changes in species composition	
Objective <i>What are you trying to achieve to address this issue?</i>	Restore and maintain species composition (as at year xxxx level)
Target <i>What is the target and by when?</i>	<ul style="list-style-type: none"> • Improve mean trophic level of the catch by xx% by 2020 (e.g. to the state in 1990); • Increase in value per unit weight of fish landed by xx% by 2020; • Increase the biomass of higher trophic level species (e.g. grouper, tuna, sharks) by 10% by 2020 (comment: Is this duplication of Item 1 above?).
Indicator <i>What measure would you use to judge performance</i>	<ul style="list-style-type: none"> • Mean Trophic Level of the catch (MTI); • Catch landings (e.g. selected indicator species); • Biomass of higher trophic level species; • Landed Catch Value; • Energy flow in the given ecosystem.
Information needs <i>What information is required to check the indicator against the target?</i>	<ul style="list-style-type: none"> • Fisheries Statistics (catch levels, fish sizes); • Univ. British Columbia data base on fisheries indicators (Sea Around Us Project); • Diet composition of species; • Market prices; • Inflation ; • Data for ecosystem modelling; • Survey data.
PART B	
Actions	
Institutional arrangements <i>What new institutional arrangements will be needed?</i>	<ul style="list-style-type: none"> • Strengthen research institutes and departments responsible for fisheries statistics for high resolution data collection; • Arrangements for a better co-operation in the management of fish stocks within the country (Fisheries Advisory body/ Management council);

	<ul style="list-style-type: none"> • Arrangements for a better co-operation in the management of fish stocks between countries in BOBLME region (Regional Fisheries Management/Advisory body); • Form national technical committee to address concerns on shared stocks; • Strengthen fisheries marketing institutions for eco-labelling and value additions; • Regional co-operation to address trade barrier issues.
<p>Legal and policy reforms <i>What policy reforms will be needed in the future and what legal support is required?</i></p>	<ul style="list-style-type: none"> • Incorporate or base fisheries legislation on the concept of CCRF, incl. EAFM; • Formulate legislation on licensing scheme ; • Formulate legislation to address IUU fishing, including catch declaration by fishers; • Allocate adequate funds for fisheries management; • Policies should address/focus on transboundary fish stocks; • Incorporate climate change consideration in fisheries policy; • Involve fishermen's organizations, research institutions in policy formulation process; • De-centralize fisheries management; • Harmonies regulation or management measures on trans-boundary species within BOBLME; • Support value addition to the fisheries products that support sustainability; • Promote sustainable aquaculture;
Management measures	
<p>- Current <i>What management actions are currently used?</i></p>	<ul style="list-style-type: none"> • Licensing scheme, including for fishing vessels; • MPAs; • Zoning; • Closed seasons and areas; • Co-management for few fisheries; • Gear regulation e.g. mesh size regulations and prohibition of destruction fishing practices/gears; <i>(Remark: Many of the above management actions are not at desired levels or are inadequately implemented)</i>
<p>- Future <i>What needs to be in place in the future?</i></p>	<ul style="list-style-type: none"> • Reduce destructive fishing gear; Control gear dimensions and specifications; • Strengthen co-management; • Certification/ecolabeling (eco-friendly fisheries); • Promote incentives for sustainable fishery for high trophic level species;

	<ul style="list-style-type: none"> • Strengthen implementation of existing Fisheries Management Plans; • Promote bycatch reduction devices; • Address trade barriers especially of high value exported species at a coordinated regional level; • Promote implementation of FAO CCRF, including EAF; • Strengthening MPAs/refugias and No- take Zones; • Protect depleted fish species; • Protect spawners (incl. spawning aggregations) and spawning grounds particularly those of high trophic level, high value species;
<p>Enforcement and compliance</p>	
<p>- Current <i>What arrangements are currently used to ensure compliance with rules and regulations?</i></p>	<ul style="list-style-type: none"> • Fisheries Ministries and other organizations (National and RFMO); • Coastguard and Navy; • MCS.
<p>- Future <i>What extra enforcement and compliance arrangements will need to be introduced?</i></p>	<ul style="list-style-type: none"> • Establish Observer scheme; • Strengthen existing MCS systems, incl. establishment of a network of MCS in BOBLME; • Strengthen fisheries management bodies; • Strengthen fishermen's organizations; • Commerce Ministries/Marketing Institutions; • Involve communities living around MPAs; • Strengthen fisheries management enforcement units.
<p>Awareness and communication <i>Who will be the main target(s) for improved communications and awareness building?</i></p>	<ul style="list-style-type: none"> • Policy makers and fisheries managers; • Fisheries Departments; • NGOs; • Fishermen, Fishermen Organizations/co-operatives; • Fishing Communities living around MPAs; • Marketing institutions; • Private Companies; • Research Organizations; • Legal experts;

	<ul style="list-style-type: none"> • Local leaders/religious leaders; • Educational institutions; • Media personnel. <p><i>Approaches include:</i></p> <ol style="list-style-type: none"> 1. Educational programs for students at all level 2. Awareness programs for fishers, politicians, decision makers
<p>Information strengthening <i>What actions are needed to strengthen information needed for the indicators?</i></p>	<ul style="list-style-type: none"> • Strengthen data collection system on ecosystem indicators, including Log book data collection; • Stock assessment of selected trans-boundary species; • Establish a regional database system/network.
<p>Human capacity development <i>What capacity building is required and who be the main target audience?</i></p>	<p>Capacity building in:</p> <ul style="list-style-type: none"> • Fisheries management (policy makers, fishery managers, fishers); • Handling and analysis of fisheries data (fisheries officers, researchers); • Stock assessment (fisheries managers, fishers); • Research, including ecosystem modelling (researchers); • Fisheries enforcement (fisheries enforcement officers).
<p>Responsible agency <i>Nominate what agency is responsible for monitoring and reporting on the issue?</i></p>	<ul style="list-style-type: none"> • Departments/Ministry of Fisheries; • Local Councils/Bodies; • Research Institutions; • Fishermen's Organizations; • Companies and trade associations; • Customs; • Ministry of trade; • Research institutions/universities; • Department of fisheries; • Regional institutions (E.g. SEAFDEC, BOBP-IGO).
<p>Other</p>	

ISSUE 3: High proportion of juvenile fish	
Objective <i>What are you trying to achieve to address this issue?</i>	Reduce the proportion of juvenile fish caught and/ or retained
Target <i>What is the target and by when?</i>	<ul style="list-style-type: none"> • Reduce the percentage of juvenile fish caught by 10% by 2020; • Reduce the percentage of commercially important juvenile fish caught by 50% by 2020; • Reduce unselective/destructive fishing (effort for unselective fishing gears) by 20% by 2020; • Reduce fishing effort targeting juvenile fish by 20% by 2020.
Indicator <i>What measure would you use to judge performance</i>	<ul style="list-style-type: none"> • Size composition of species caught; • Percentage of juveniles in the catch; • Fishing effort by gear type.
Information needs <i>What information is required to check the indicator against the target?</i>	<ul style="list-style-type: none"> • Length frequency measurements of catch of selected species; • Data on length at first maturity (Lm) for selected species; • Data on gear selectivity, including length at first capture (Lc) by gear and percentage of juvenile catch by gear; • Information on bycatch reduction devices; • Fisheries statistics, including effort by gear type and discards (incl. at-sea); • Loss in economic value as a result of capture of juveniles.
PART B	
Actions	
Institutional arrangements <i>What new institutional arrangements will be needed?</i>	<ul style="list-style-type: none"> • Strengthening fisheries statistics office/research institutes for high resolution data collection; • Arrangements for better co-operation in the management of fish stocks within the country (Fisheries Advisory body/ Management council); • Arrangements for better co-operation in the management of fish stocks between countries in BOBLME region (Regional Fisheries Management/Advisory body); • Establish National Technical Committee to address concerns on shared stocks; • Strengthen fisheries marketing institutions for eco-labelling.

<p>Legal and policy reforms <i>What policy reforms will be needed in the future and what legal support is required?</i></p>	<ul style="list-style-type: none"> • Incorporate or base fisheries legislations on FAO CCFR, including EAF concept; • Allocate adequate funds for fisheries management; • Incorporate climate change considerations in fisheries management; • Involve fishermen’s organizations, research institutions in policy formulation process; • Promote sustainable aquaculture; • Harmonies regulation or management measures on trans-boundary species within BOBLME (e.g. mesh size).
<p>Management measures</p>	
<p>- Current <i>What management actions are currently used?</i></p>	<ul style="list-style-type: none"> • MPAs; • Zoning; • Closed seasons and areas; • Co-management for few fisheries; • Gear regulation, including of mesh size and prohibition of destructive fishing practices/gears; • Licensing of fishing vessels. <p><i>Remark: Many of the above management actions are not at desired levels or are inadequately implemented</i></p>
<p>- Future <i>What needs to be in place in the future?</i></p>	<ul style="list-style-type: none"> • Effective implementation of current management measures; • Regulations to reduce use of destructive fishing gear; • Strengthen co-management; • Certification/ecolabeling (eco-friendly fisheries); • Promote incentives for sustainable fishery; • Reduce perverse subsidies; • Controls on gear dimensions and specifications; • Develop and implement appropriate Fisheries Management Plans; • Promote bycatch reduction devices; • Promote EAF; • Strengthen MPAs/refugias and No- take Zones; • Protect juveniles of declining species, including protection of nursery grounds; • Minimum size regulations (length at capture);

	<ul style="list-style-type: none"> • Certification of the source of fish meal for aquaculture; • Reduce demand for wild caught fish in aquaculture/ identify alternative source of feed for aquaculture.
Enforcement and compliance	
<p>- Current</p> <p><i>What arrangements are currently used to ensure compliance with rules and regulations?</i></p>	<ul style="list-style-type: none"> • Fisheries Ministries and other organizations (National and RFMOs); • Local Administrations; • Customs ; • MCS; • VMS.
<p>- Future</p> <p><i>What extra enforcement and compliance arrangements will need to be introduced?</i></p>	<ul style="list-style-type: none"> • Establish Observer schemes; • Strengthen existing MCS systems, including establishing a network of MCS in BOBLME; • Strengthen fisheries management bodies and enforcement units; • Strengthen fishermen's organizations; • Empower communities living around MPAs; • Enforce minimum legal size at capture; • Improve VMS.
<p>Awareness and communication</p> <p><i>Who will be the main target(s) for improved communications and awareness building?</i></p>	<ul style="list-style-type: none"> • Policy/decision makers, politicians and managers; • Fisheries Departments; • NGOs; • Fishermen, Fishermen Organizations/co-operatives; • Fishing Communities living around MPAs; • Aquaculture establishments; • Marketing institutions; • Private Companies; • Research Organizations; • Legal experts; • Local leaders/religious leaders; • Educational institutions; • Media personnel; • Consumers;

	<ul style="list-style-type: none"> • Students at all levels.
<p>Information strengthening <i>What actions are needed to strengthen information needed for the indicators?</i></p>	<ul style="list-style-type: none"> • Strengthen data collection system on ecosystem indicators aggregated on gear, data on juvenile capture, gear selectivity and discard-at-sea; • Data on fate of juveniles landed and use in market chain; • Economic loss of catching (including discards) juveniles; • Log book data collection; • Establish a regional database system/network.
<p>Human capacity development <i>What capacity building is required and will be the main target audience?</i></p>	<p>Capacity development in:</p> <ul style="list-style-type: none"> • Fisheries management (policy makers, fishery managers, fishers); • Handling and analysis of fisheries data (fisheries officers, researchers); • Fisheries enforcement (fisheries enforcement officers); • Research capacity (E.g. alternative feed development); • Use of selective fishing methods/devices (fishermen).
<p>Responsible agency <i>Nominate what agency is responsible for monitoring and reporting on the issue?</i></p>	<ul style="list-style-type: none"> • Departments/Ministry of Fisheries; • Local Councils/Bodies; • Research Institutions; • Fishermen's Organizations and communities; • Private Companies; • Aquaculture establishments.
<p>Other</p>	<p>Develop/identify alternative raw material for fish meal</p>

ISSUE 4: Changes in biodiversity, including vulnerable and endangered species	
PART A	
Objective, target, indicators information	
Objective <i>What are you trying to achieve to address this issue?</i>	To restore biodiversity status to 1980 level by 2020
Target <i>What is the target and by when?</i>	<ul style="list-style-type: none"> • Enhance species richness in selected ecosystems; • Eliminate the use of destructive fishing gear and practices by 2020 including in critical habitats; • Reduce incidental catch of vulnerable and endangered species by 50% by 2020.
Indicator <i>What measure would you use to judge performance</i>	<ul style="list-style-type: none"> • Biodiversity index /Species diversity; • Number of destructive fishing gear in use; • Population of endangered species (e.g. whale shark, dugong, sea turtle, dolphins and whales); • Mortality of endangered species (number killed per year).
Information needs <i>What information is required to check the indicator against the target?</i>	<ul style="list-style-type: none"> • Species composition and species richness; • Fisheries statistics; • Data on non-fishery groups (vulnerable and endangered species), including from log books and surveys; • Data on habitats; • Information on existing MPAs; • IUCN Red List and CITES listed species; • Information on the impact of fishing on biodiversity and critical habitats; • Impacts of climate change.
PART B	
Actions	
Institutional arrangements	<ul style="list-style-type: none"> • Strengthening fisheries statistic offices/research institutes for high resolution data collection;

<p><i>What new institutional arrangements will be needed?</i></p>	<ul style="list-style-type: none"> • Arrangements for better co-operation in the management and conservation of biodiversity within the country; • Arrangements for better co-operation in conservation of biodiversity between countries in BOBLME region (Regional Fisheries Management/Advisory body) including establishing regional network on vulnerable and endangered species; • Interagency working group on biodiversity within countries; • Consultations with environmental and conservation groups (E.g. WWF, IUCN, CITES).
<p>Legal and policy reforms <i>What policy reforms will be needed in the future and what legal support is required?</i></p>	<ul style="list-style-type: none"> • Incorporate in fisheries legislation the concept of FAO's CCRF including EAF; • Allocate adequate funds for fisheries management and conservation of endangered and vulnerable resources; • Involve fishermen's organizations, research institutions in policy formulation process; • Integrated coastal zone management with fisheries policies; • Improve compliance to commitments to International biodiversity-related conventions (E.g. CBD, CITES); • Regional Plans of Actions and NPOAs on endangered and threatened species; • Legislative framework on protected species; • Update penalties for biodiversity destruction; • Harmonies legislative framework on charismatic/ endangered species E.g. whale sharks & turtles; • Legal protection for vulnerable and endangered species, incl. prohibition of the capture and consumption of vulnerable and endangered species; • Legally adopt MPA as a tool for management of vulnerable and endangered species.
<p>Management measures</p>	
<p>- Current <i>What management actions are currently used?</i></p>	<ul style="list-style-type: none"> • MPAs; • Zoning; • Closed seasons/areas; • Co-management for few fisheries; • Gear regulation; • Protection of endangered and threatened species; <p><i>Remark: Many of the above management actions are not at desired levels or are inadequately</i></p>

	<i>implemented</i>
- Future <i>What needs to be in place in the future?</i>	<ul style="list-style-type: none"> • Effective implementation of current management measures; • Reduce destructive fishing gear in critical habitats; • Prohibit the use of destructive fishing practices/gears; • Strengthen co-management; • Certification/ecolabeling (eco-friendly fisheries); • Promote use of bycatch reduction devices; • Promote EAF; • Strengthen MPAs/refugias and No- take Zones; • Strengthen protection of fish spawning aggregations; • Provide incentive for sustainable fisheries integrated with biodiversity conservation; • Formulate and implement NPOA/RPOA for endangered and vulnerable species and biodiversity; • Promote eco-tourism and non-consumptive use of biodiversity; • Periodic revision and update of endangered and vulnerable species listing; • Periodically update the list of protected species; • Breeding in captivity of endangered and threatened species, where practical; • Incorporate fuel efficiency norms at different levels in fisheries chain to reduce CO2 emission.
Enforcement and compliance	
- Current <i>What arrangements are currently used to ensure compliance with rules and regulations?</i>	<ul style="list-style-type: none"> • Fisheries Ministries and other organizations (National and RFMOs); • Commerce Ministry; • Environment/ Forest Ministries/Agencies; • NGOs; • Local Administrations; • Customs; • MCS; • VMS.
- Future <i>What extra enforcement and compliance arrangements will need to be introduced?</i>	<ul style="list-style-type: none"> • Establish Observer schemes; • Strengthening existing MCS systems, including establishing a network of MCS in BOBLME; • Strengthen fisheries/ environment/ conservation bodies and enforcement units;

	<ul style="list-style-type: none"> • Involve communities living around MPAs; • Law Enforcement; • Network on monitoring of endangered species; • Introduce/implement VMS; • Tracking and forensic investigation of traded products through advanced techniques such as DNA sequencing.
<p>Awareness and communication <i>Who will be the main target(s) for improved communications and awareness building?</i></p>	<ul style="list-style-type: none"> • Policy makers, Managers and Conservationists; • Fisheries Departments; • NGOs; • Fishermen Organizations/co-operatives, fishermen; • Fishing Communities living around MPAs; • Marketing institutions; • Fishing Companies; • Research Organizations; • Legal experts and officials; • Local leaders/religious leaders; • Educational institutions; • Media personnel; • Environmental / Conservation groups; • Tourists; • Recreational anglers/ sport fishing/ big game fishing; • General public. <p><i>Awareness programmes:</i></p> <ul style="list-style-type: none"> • <i>for fishermen, to avoid catching and to properly handle and release captured endangered and vulnerable species</i> • <i>to educate the public regarding the take and consumption of vulnerable and endangered species</i>
<p>Information strengthening <i>What actions are needed to strengthen</i></p>	<ul style="list-style-type: none"> • Strengthen data collection system on ecosystem indicators, incidental captures, fisheries interactions with endangered species;

<p><i>information needed for the indicators?</i></p>	<ul style="list-style-type: none"> • Criteria for listing endangered and threatened species in red list; • Movement of endangered and vulnerable species within and outside the region; • Visual surveys; • Tagging programmes; • Habitat mapping; • Observer scheme.
<p>Human capacity development <i>What capacity building is required and will be the main target audience?</i></p>	<p>Capacity building in:</p> <ul style="list-style-type: none"> • Implementing EAF and data collection; • Stock management; • Environmental management; • Biodiversity indicators; • Identifying the movement of migratory endangered and threatened species; • Tagging and remote sensing; • Species identification (fisheries officers and fishers); • Avoidance and proper handling and release of captured endangered and vulnerable species (fishers); • Trade issues and traceability.
<p>Responsible agency <i>Nominate what agency is responsible for monitoring and reporting on the issue?</i></p>	<ul style="list-style-type: none"> • Departments/Ministry of Fisheries; • Ministry of Environment/Forestry/Wildlife; • Local Councils/Bodies; • Fishermen Organizations; • Private companies; • Research Institutions (incl. Remote/satellite tracking); • Remote sensing institutions; • Oceanographic institutions; • Universities; • NGOs/ INGOs/ Int'l Organizations (E.g. IUCN, CMS).
<p>Other</p>	



Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project and to lay the foundations for a coordinated programme of action designed to improve the lives of the coastal populations through improved regional management of the Bay of Bengal environment and its fisheries.

The Food and Agriculture Organization (FAO) is the implementing agency for the BOBLME Project.

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For more information, please visit www.boblme.org



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